

NATURAL RESOURCES CONSERVATION SERVICE  
CONSERVATION PRACTICE STANDARD

CROSS WIND TRAP STRIPS

(Acre)

CODE 589C

**DEFINITION**

Herbaceous cover resistant to wind erosion established in one or more strips across the prevailing wind erosion direction.

**PURPOSES**

This practice may be applied as part of a conservation management system to support one or more of the following:

- Reduce soil erosion from wind.
- Induce deposition and reduce transport of wind-borne sediment and sediment-borne contaminants downwind.
- Protect growing crops from damage by wind-borne soil particles.
- Provide food and cover for wildlife.

**CONDITIONS WHERE PRACTICE APPLIES**

This practice applies to cropland, or other land where crops are grown.

This standard includes the location of cross wind trap strips and their management for identified uses.

**CRITERIA**

**General Criteria Applicable To All Purposes Named Above**

**a. Number of Strips:**

A cross wind trap strip system shall consist of at least two strips.

**b. Width of Trap Strips:**

Trap strips shall be wide enough to trap saltating soil particles and store wind-borne sediments originating upwind.

The width of the trap strip shall be at least 15 feet when vegetation or stubble in the strip will normally be one foot or more in height during periods when wind erosion is expected to occur.

The minimum width of the trap strip shall be at least 25 feet when the effective height of the vegetation or stubble in the strip will normally be less than one foot during periods when wind erosion is expected to occur.

**c. Vegetative Cover:**

Trap strips may consist of perennial (i.e. grasses) or annual plants (i.e. Corn, Milo, and Millet), growing crop or stubble. Criteria for the establishment of perennial herbaceous vegetation are in Range Planting (550) and/or Pasture and Hayland Planting (512) . Seeding rates will be a minimum of 30 Pure Live Seeds/Sq. foot . Refer to Section II of the Field Office Technical Guide Pasture and Hayland Interpretations "Certified Perennial Grass Varieties Recommended for Nebraska" for adapted grass varieties.

Plant materials shall be selected for the following characteristics:

- Adaptation to the site (refer to).
- Erect during wind erosion periods.
- Tolerant to sediment deposition.
- Achieve the desired height during the critical wind erosion period.
- Refer to Range Planting (550) and/or Pasture and Hayland Planting (512) for

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adapted grass species that will achieve the desired effects.

### **Additional Criteria To Reduce Soil Erosion From Wind**

#### **a. Location of Trap Strips:**

Trap strips established for this purpose shall be located as follows:

- ◆ At the windward edge of fields; or
- ◆ Immediately upwind from areas within fields to be protected from erosion or deposition; or
- ◆ In recurring patterns interspersed between erosion-susceptible strips based on current wind erosion prediction technology in Section I of the FOTG.

#### **b. Direction and Width of Erosion-Susceptible Strips:**

When trap strips are installed in patterns alternated with erosion-susceptible crop strips, and the direction of strips deviates from perpendicular to the prevailing wind erosion direction, the width of the erosion-susceptible strips shall be correspondingly reduced.

The effective width of strips shall be measured along the prevailing wind erosion direction during those periods when wind erosion is expected to occur. It shall not exceed the width permitted by the soil loss tolerance (T), or other planned soil loss objective.

The width of strips shall be determined using current approved wind erosion prediction technology found in Section I of the Field Office Technical Guide. Calculations shall account for the effects of other practices in the conservation management system.

### **Additional Criteria To Induce Deposition And Reduce Transport Of Wind-borne Sediment And Sediment-borne Contaminants Downwind**

#### **Location of Trap Strips:**

Trap strips shall be established immediately upwind from areas to be protected from sediment deposition. There shall be no erosion-exposed area located between the trap

strip and the area to be protected from sediment deposition.

### **Additional Criteria To Protect Growing Crops From Damage By Wind-borne Soil Particles**

#### **a. Placement of Trap Strips:**

Trap strips shall be established immediately upwind from areas used for sensitive crops. There shall be no erosion-exposed area located between the trap strip and the crop to be protected.

#### **b. Direction and Width of Strips of Sensitive Crops:**

Where trap strips are installed in patterns alternated with strips of crops susceptible to damage by wind-borne soil particles, and the direction of strips deviates from perpendicular to the prevailing wind erosion direction, the width of strips planted to sensitive crops shall be correspondingly reduced.

The effective width shall be measured along the prevailing wind erosion direction during those periods when sensitive crops are susceptible to damage by wind-borne soil particles. It shall not exceed the width permitted by the crop tolerance to wind erosion. Crop tolerance to wind erosion is the maximum rate of soil blowing that crop plants can tolerate without significant damage due to abrasion, burial, or desiccation. Refer to Table 1 for soil loss tolerances of various crop seedlings.

**Table 1 Estimated Crop Seedling Tolerances to Soil Loss (Blowing)**

Crop	Estimated Crop Seedling Tolerance (T/Ac/Yr.)
Asparagus	1.0
Barley	1/
Broccoli	1.0
Buckwheat	1/
Cabbage	1.0
Carrots	0.0
Corn	2.0

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Cucumbers	0.0
Egg plant	1.0
Green peas	0.5
Potatoes	1.0
Lettuce	0.0
Lima beans	0.5
Oats	1/
Onions	0.0
Rye	1/
Snap beans	0.5
Sorghum	2.0
Soybeans	1.0
Spinach	0.0
Squash	0.0
Sweet corn	2.0
Sweet peppers	1.0
Sweet potatoes	1.0
Table beets	0.0
Tomatoes	0.5
Wheat	1/

1/ Will likely tolerate soil blowing equal to or greater than the tolerable soil loss.

Wind erosion calculations shall account for the effects of other practices in the conservation management system i.e. Cross Wind Ridges, Crop Rotation, and Residue Management. The width of the crop strips, alignment, and distance between Cross Wind Trap Strips shall be determined using current approved wind erosion prediction technology to estimate wind erosion during specific cropstage periods.

### **Additional Criteria to Provide Food and Cover for Wildlife**

#### **a. Vegetative Cover:**

Trap strips shall consist of vegetation that provides food and/or cover at the appropriate time for the targeted wildlife species. Refer to Upland Wildlife Habitat Management (645) for

guidance on managing and selecting vegetation.

#### **b. Trap Strip Height:**

The minimum height of trap strips designed for this purpose shall have a minimum expected height that provides adequate cover for the targeted wildlife species. Refer to Upland Wildlife Habitat Management (645) for guidance on managing vegetation.

### **CONSIDERATIONS**

The effectiveness of Cross Wind Trap Strips is maximized when strips are oriented as close to perpendicular as possible to the prevailing wind erosion direction for the period for which the system is designed.

Selection of plants for use in trap strips should favor species or varieties tolerant to herbicides used on adjacent crops or other land uses. When trap strips are designed to enhance wildlife habitat, plant species diversity within the strip should be encouraged. Trap strips that result in multiple structural levels of vegetation within the strip will maximize wildlife use.

Some plants are damaged by blowing wind as well as by wind-borne sediment. In such cases, the spacing between trap strips may have to be reduced from that obtained using wind erosion prediction technology.

Drifting snow or grazing by wildlife may reduce the trapping capability of trap strips. In such cases, other conservation practices, including the residue management practices (329A, 329B, or 329C), herbaceous wind barriers (422A), Windbreak/Shelterbelts (380), Crosswind Stripcropping (589B), Cross Wind Ridges (589A), etc., may be used with, or as alternatives to, trap strips to achieve the conservation objective.

Transport of wind-borne sediment and sediment-borne contaminants offsite can be reduced by this practice when used in a conservation management system in conjunction with other wind erosion control practices. This can include practices such as Cross Wind Ridges, Crop Rotations, Cover Crops and Residue Management that provide vegetative cover at the appropriate time.

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### PLANS AND SPECIFICATIONS

Specifications for establishment and maintenance of this practice shall be prepared for each field or treatment unit according to the Criteria, Considerations, and Operation and Maintenance described in this standard. The number of strips, width of strips, vegetative cover, location of strips, direction and management will be detailed. Appropriate erosion prediction calculations will be retained in the customer folder to verify the design of this practice.

Specifications shall be recorded using approved specification sheets, job sheets, Nebraska Conservation Planning Sheet No. 16 "Winderosion Control Systems"/No. 18 "Crop Rotation and Residue Management", narrative statements in the conservation plan, or other acceptable documentation.

### OPERATION AND MAINTENANCE

After establishment, perennial trap strips shall be fertilized as needed to maintain plant vigor. Noxious weeds shall be controlled with the most appropriate method(s).

Mowing or grazing of trap strips shall be managed to allow re-growth to the planned height before periods when wind erosion or crop damage is expected to occur.

Wind-borne sediment accumulated in trap strips shall be removed and distributed over the surface of the field as determined appropriate.

Trap strips shall be re-established or relocated as needed to maintain plant density and height. Trap strips may be included as a part of the normal crop rotation.

When barriers are designed to enhance wildlife habitat, they shall not be mowed unless their height and width exceeds that required to obtain the wildlife objective and they become competitive with the adjoining land use. When mowing is necessary, it shall be done only during non-nesting season for upland game birds on or after July 15 (refer to Upland Habitat Management (645) for more guidance).

### REFERENCES

Section I, Erosion Prediction, Nebraska Field Office Technical Guide.

National Agronomy Manual, USDA NRCS